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described then in detail the form and fibers of the nuclear framework of the ganglion cell. For the most part these form a network and pass out of the cell as fine fibers. The arrangement is particularly plain in the *ganglion stellatum* of the cuttle fish. These fine fibers unite, in this case, the cell with its capsule and the cells with one another. Against Leydig's view that the life processes are associated with the hyaloplasma is the fact that during life the fibers and their nodal points continually change their form. That such changes represent a normal process is probable.

*Nouvelles recherches sur la constitution cellulaire de la fibre nerveuse.* L. GEDOELST. La Cellule. T. V., 1er Fasc., 1889. 1 plate.

The discussion in this paper is centred on the reticular portion of the medullary sheath. Gedoelst has previously published on this topic, and has convinced himself on the following points: First, there exists a reticulum which has been described successively by Ewald and Kühne, and by Lautermann. Second, the neurokeratine network of the former is identical with the network of the latter. Third, this network is preformed and not merely a result of the reagents used. Fourth, the threads of the network are impregnated with lecithine, while cerebrine occupies the meshes. The present paper deals first with the clefts of Lautermann. These are not preformed in the sense that they are plainly visible in the normal nerve, but are preformed in the sense that at the points where they appear there are distinct peculiarities of structure in the sheath. These peculiarities point to the existence of a substance which swells with ease, thus separating the myeline into segments and exposing at one stage the threads of the network. As a rule the swelling goes so far that these threads are broken. The surface of the cones thus formed with the encircling ridges Gedoelst identifies with the "spiral fiber" of Golgi and Rezzonico, which he looks upon as an artefact. His second point is the relation of the parts at the nodes. The axis cylinder is continuous, as is also the sheath of Schwann. So far as the latter is concerned the fiber may be considered to have a structure analogous to that of a filamentous alga for example, in which the outer cell wall is continuous despite the fact that from it arise the cross-partitions which divide the filament into segments. This cross-partition in the case of the axis cylinder is a delicate membrane constructed like a cribriform plate through the holes of which the fibrillae pass. Only the most delicate manipulation serves to preserve this plate, and all the other relations of the parts at the node are but deformations of this structure. A good bibliography of the recent works goes with the paper.

*Weiterer Beitrag zur Kenntniss der Golgi'schen Untersuchungsmethode des centralen Nervensystems.* Dr. L. GREPPIN. Arch. f. Anat. u. Entwicklungsgsch.—Supplement-Band, Nov., 1889. 1 Taf.

The material employed was mainly the human cerebrum and cerebellum. To the silver method of Golgi, Greppin has added a technical point which cannot fail to be useful. The silver stained section is floated in a 10 per cent. solution of hydrobromic acid. By this treatment the silver deposit turns white by reflected light, while by transmitted light it still appears black. The pictures thus obtained are as sharp as with the silver alone, and the preparations, besides being permanent can be mounted under a cover glass, and further can be treated subsequently by a number of methods. So far as staining is concerned, the author finds a final treatment by Pal's modification of Weigert's haematoxylin method by far the most instructive. It is also found that, after the section has been treated with a 10 per cent. solution of hydrobromic acid, if it then be put in a 40 per cent. solution of the same, the

silver deposit is slowly dissolved out, leaving the cellular elements more or less clearly marked. From a study of such sections, Greppin arrives at several conclusions of interest. So far as the results of Rossbach and Sehrwald go, he agrees with them in viewing the place where the silver deposit is made as the lymphatic system of the brain. By his method he further finds some coloration of the nervous elements themselves. In matching the pictures of the lymph spaces about the nerve-cell with the cell element itself, he has not observed lateral branches from the axis cylinder process filling the lateral lymph spaces which have been taken to indicate the existence of such branches. He therefore looks on the axis cylinder prolongation as unbranched. Connections either between nerve cells by any of their prolongations or between the nerve cells and fibers he has not seen, though he believes the latter to exist. In the most densely stained specimens there is always a portion not stained, which he identifies with the ground substance of the older histologists. The periglial spaces form a connected system, and he assumes that the contained glia cells thus constitute a network of varying density in the meshes of which the nervous elements are to be found. The general aim of the paper is to show that by the application of Golgi's method no new facts of fundamental importance have been added, but that the older views have been confirmed.

(Greppin does not appear to have examined any nerve cells the axis cylinder prolongations of which belonged to Golgi's second class, and in which the relation of the axis cylinder to its assumed branches is more important, for in these cells the axis cylinder must either pass into the branching lymph channels or else terminate abruptly soon after leaving the cell.—REV.)

*Transactions of the Association of American Physicians.* Third session, held at Washington, September 18-20, 1888.

At this meeting of the association one topic chosen for discussion was "The relation between trophic lesions and diseases of the nervous system." From the clinical side the presentation was made by Dr. E. C. Seguin. For his purpose Seguin recast the question in the form: "What are the lesions which may be supposed to be directly produced by disease of the nervous system (brain, spinal cord, and nerves); and what is the essential causal relation between the two factors?" Trophic lesion is understood to mean here a positive histological alteration in the tissue. Seguin distinguishes for convenience two classes. First, those occurring in parts whose sensibility is more or less reduced by nervous disease and which are exposed to the action of traumatic and infectious influences. Second, those occurring in deeper parts apparently not exposed to such influences. In cases of the first class—like ulcerations of the cornea after injury to the trigeminus, the changes in hair and nails and even extensive necrosis and gangrene following section and other injuries of the nerve trunks—it has been found that by careful exclusion of trauma and infection the disturbances can be prevented. Perforating ulcer, arthropathies, etc., which occur in the course of posterior spinal sclerosis, are extremely rare in patients able to avoid over-exertion; while cystitis, which was long considered one symptom of myelitis and injury to the spinal cord, is preventable by the use of aseptic catheters. In the second class, Seguin names neuro-muscular atrophy, and the so-called herpatic lesions of the skin, both he considers as true trophic lesions. The mechanism of these trophic changes is too obscure for discussion. As an attempt to simplify the problem under debate, Seguin calls attention to the following points in his presentation. First: That he has "rejected from the category of trophic lesions all vaso-motor, calorific and metabolic phenomena, as well as mere quantitative reductions in tissues and organs; reserving the name for such alterations as